Ethos and the Construction of a Believable Character for Information Systems

Melanie Feinberg
School of Information
University of Texas
1 University Station, D7000
Austin, TX 78721-0390
512-471-8487
feinberg@ischool.utexas.edu

ABSTRACT

Within information science, work on information credibility often focuses on generalized models of user assessment behavior and associated properties that mark credible information across document types, user groups, and communicative purposes. As conceptualized within the field of rhetoric, however, ethos, or a form of persuasive appeal that centers around a speaker's believability, is situational. A speaker generates ethos within a particular text by constructing a character that aligns with the values of a selected audience for a specific rhetorical event. In this paper, I define ethos and contrast it with ideas of credibility from information science. I then illustrate how information systems generate ethos by analyzing two schemes for organizing information, the Women's Thesaurus and the DrugSense newsbot concept dictionary, showing how these two schemes use different strategies to build ethos with different audiences. I conclude by discussing how rhetorical concepts such as ethos can help illuminate the ways in which information systems function as communicative devices, and how this understanding might facilitate system design. As social software continues to proliferate, and the division blurs between user and designer, between content consumer and content provider, research on the expressive potential of information systems seems particularly apt.

1. INTRODUCTION: CREDIBILITY, BELIEVABILITY, AND PERSUASIVENESS

Credibility research in information science centers on the construction of sequential models to describe the process of user credibility judgments and on the enumeration of general factors that users consider in the application of such judgments. Such research tends to imply that there is a generally valid perception or standard of credibility that is equally applicable to all documents. The factors that constitute this type of credibility standard are often characterized as independent entities that are not significantly affected by the immediate communicative situation; for example, the reputation of an author or a publisher may be determined on the basis of academic credentials, professional affiliation, and previous works, without reference to the actual document under examination or the situation in which the document is being used.

Wilson's [1] discussion of cognitive authority has been adopted by a number of information science researchers as a conceptual foundation for modeling credibility (such as [2], [3], [4]). Wilson [1] posits a linear, independent set of judgments that determine whether to trust a particular text, similar to the judgments one would make in determining the authority of a person: the authority of the author, based on current reputation and accomplishments; publication history, or the authority of the organization publishing (or otherwise endorsing) the text; and intrinsic plausibility, whether or not a text on its face appears sensible and worthy of belief. Fritch and Cromwell [4] follow Wilson's lead in modeling credibility assessment as a series of decisions that independently render judgment on each facet of credibility. Other researchers, such as Rieh [3] and Wathen and Burkell [5], retain a general model of sequential, independent judgment, but add nuance by including additional assessment criteria and by describing the judgment process as iterative.

Information science research on credibility is less likely to explore the ways that credibility factors might interact in particular cases, for example, if an eminent scholar of musicology says that the world is flat, or if an otherwise credible-seeming text is put out by a vanity press. While Wathen and Burkell's [5] model of credibility assessment, for example, allows for an iterative series of judgments, the tests remain independent and sequential, and the only outcomes are to pass (move on to another test) or fail (decide the information is not credible and reject the document). And yet depending on the way that different elements of a rhetorical situation interact, a document that passes credibility tests may be less believable and persuasive for a particular audience than the tests would indicate. For some people, in some situations, a text that assumes a flat-earth position will become suspect, no matter the subject of the document (for example, Orientalist motifs in classic Italian opera) and the author's qualifications in that area. For others, however, or even for the same people in a different situation (for example, if the document being considered is a satire or parody of academic writing), this may not be the case.

Moreover, despite a document's adherence to generalized credibility standards, audience perceptions of the document as less believable and persuasive may indeed be principled and consistent. It is not irrational, for example, for a religious audience to be skeptical of a document that presents its author as an atheist, even if the author holds impeccable academic credentials on the subject matter at hand; it is quite natural to wonder if someone with widely divergent values really has an audience's best interests at heart. The apprehension of shared

values on the part of author and audience is a key, and eminently reasonable, element in persuasion ([6], [7]). While all book reviews in the *New York Times* might be equally credible according to general standards, I personally am more inclined to find certain reviewers more believable than others, for example those that share my endorsement of forthright honesty in rendering opinion. However, this preference remains entirely situational; because I also believe that any author's effort deserves respect, if a critic that I often find persuasive indulges in an arrogant, obnoxious tone, for example, I am less likely to believe that particular review, this time due to a discordance in perceived values.

Similarly, a document that fails credibility tests may be reasonably perceived as believable and persuasive within a certain context. Blogs written by amateur reporters who openly subscribe to progressive politics may display few markers of general credibility and yet be quite believable to an a like-minded audience who feels that the mainstream media does not adequately report their issues of concern. In fact, in such a case, the lack of established credibility indicators may increase believability for the selected audience while decreasing it for those who maintain faith in established journalistic institutions. The Web site that houses the DrugSense newsbot concept dictionary [8], an example described more fully in section 4, is produced by an organization with little institutional credibility, and its appearance is sloppy and unprofessional, two factors that would appear to damage the site's credibility according to many models. However, as will be discussed in section 4, for the site's apparent target audience of those similarly in opposition to established authority in the area of drug policy, these features actually enhance believability and thus persuasiveness.

In sum, while information credibility models and standards provide a useful baseline towards understanding common perceptions of what renders a document generally believable and associated factors that influence this assessment, they lack analytical subtlety in terms of interrogating the potentially complex interactions of rhetorical elements that characterize particular textual scenarios. To more deeply comprehend how, for example, a document that passes credibility tests nonetheless does not seem believable to a particular audience, and thus does not persuasively communicate its message, I suggest that the rhetorical concept of ethos, used as the focus of a critical textual analysis, may provide additional insight. In the following section, I introduce ethos, and in sections 3 and 4, I show how two systems for organizing information, the Women's Thesaurus and the DrugSense newsbot concept dictionary, build ethos in different ways for different audiences.

2. ETHOS: BELIEVABILITY IN CONTEXT

For Aristotle, ethos, one of three forms of persuasive appeal, involves the representation of a speaker's (or author's) character so as to increase the trust between speaker and audience and, ultimately, to increase the likelihood that the audience will believe the speaker's case and accede to the action proposed by the speaker [9]. To inspire this believability, Aristotle claims that a speaker needs to exhibit practical wisdom, moral character, and goodwill. As elaborated by commentators such as Smith and Garver, practical wisdom involves being able to use one's knowledge and sense to make decisions that lead to successful outcomes ([10], [11]). For example, I might persuade my boyfriend to let me provide directions while he is driving by emphasizing other occasions where I've found the correct location, in addition to my general skill at map reading and landmark identification. Or, to return to the example of a book reviewer, a critic might generate practical wisdom by showing how the current review fits into an overall pattern of accepted judgments: how the newest summer comedy, say, is yet another instance in a recent set of previously reviewed, essentially misogynistic films that rely on the affirmation of traditional gender roles.

Moral character includes the qualities that lead a person to choose actions that produce long-term contentment, as opposed to quick gratification of desires. If I am the type of person who saves an unexpected windfall instead of blowing it on a shopping spree, then I am the type of person who pays attention to ultimate consequences, and I am thus more believable, for some audiences at least. Or in the case of the book critic, a review that indulges in snotty put-downs may sacrifice moral character, and thus ultimate persuasiveness, in its pursuit of the easy laugh.

In Aristotle's sense of goodwill, the speaker shows a sense of wanting the best outcome for the audience in that particular context, even if that outcome does not appear to benefit the speaker personally [9]. If I am trying to encourage my parents in healthier eating habits, I generate goodwill by focusing on the ways in which better health will facilitate their ability to enjoy the retirement activities they've long desired, not by describing my own fondness for green salads. To show goodwill, a book critic might clarify how the opinions expressed in a review are not idiosyncratic preferences but arrived at through systematic analysis and an informed discernment.

For an audience to perceive these qualities and thus be more inclined to accept the position that a speaker advocates, the presentation of character in the text at hand, be it a speech or some other text (including document collections and other forms of information system), must match the tendencies of the audience. What's important is not that an author *possesses* such qualities but that the author is able to *show* these qualities in a way that a specific audience appreciates. Having, say, practical wisdom is not sufficient; the author must demonstrate it.

Reputation or previous actions may form the basis of such a demonstration, but the injection of reputation into the rhetorical situation works more as a form of intertextuality than as the mere addition of factual information into the current textual scenario. The key persuasive element is, for example, not the fact of being a war hero but how an author represents wartime experiences in the current rhetorical situation as juxtaposed against previous representations to the selected audience. An author who constantly brings up past heroics may find that ethos decreases in subsequent texts, depending on the audience and other contextual factors (some groups—veterans, for example—may be more likely to favor continual references to wartime service, or such reminders might be more generally acceptable during a period of conflict). Ethos depends, in other words, on the careful use of rhetorical choices at one's disposal (which may include either allusions to past actions or the conscious decision not to make such references) to generate practical wisdom, goodwill, and so forth, and thus to cultivate believability with a particular group. Furthermore, because ethos is more successfully produced when the values of a more specific audience can be identified and targeted, a document that effectively cultivates ethos with one group may sacrifice believability for another audience.

It seems to follow from this discussion that an analysis of ethos in a text should concentrate on how the audience has been

characterized and the ways in which various elements of the text complement this characterization, leading to an overall sense of believability toward both the author and the text, increasing the text's eventual persuasiveness. In the next two sections, I apply this idea in showing how textual elements in two systems for organizing information, the Women's Thesaurus and the DrugSense newsbot concept dictionary, work to generate ethos for particular audiences.

3. ETHOS IN THE WOMEN'S THESAURUS: INFILTRATION OF THE MAINSTREAM

The professionally constructed Women's Thesaurus, issued in 1987, was sponsored by the National Council for Research on Women, a network of research and advocacy centers [12]. It was created to describe bibliographic materials by and about women, in the thought that existing comprehensive systems, such as the Library of Congress Subject Headings and Library of Congress Classification, were not adequately accomplishing this task.

Although the idea of a women's thesaurus may seem motivated by a progressive, feminist agenda, something contrary to the existing status quo, the Women's Thesaurus appears to target a mainstream audience, and as such, tries to build ethos by constructing a character centered on reform, not on revolution. In my reading, the Women's Thesaurus attempts to show how the perspective that it adopts merely corrects, but does not challenge, mainstream epistemology. The audience is perceived as preferring a scientific, objective orientation toward knowledge, and the thesaurus attempts to build an ethos that aligns with this orientation, that shows how its perspective is in fact the ultimate expression of this scientific objectivity.

The introduction and usage guide to the Women's Thesaurus emphasize goals of accuracy, completeness, and neutrality, all core elements of scientific thinking, where correct, full, unbiased accounts of existing phenomena are sought. The thesaurus preface cites academic research that shows how epistemological assumptions previously thought to be objective were instead based on the experiences of a single group, white men. According to the thesaurus's self-description, because of their basis in these mistaken assumptions, former indexing vocabularies have been insufficiently complex, incomplete, and biased, and this thesaurus will correct those faults, to be a "common language" that "empowers users without prejudice" ([12], viii and xvi). In other words, the Women's Thesaurus will not privilege either gender, but will aim for true gender neutrality and associated objectivity. Given these stated aims, it is perhaps not surprising that the word *feminist,* which is often not associated by mainstream audiences with a gender-neutral position, is used sparingly throughout the thesaurus's introductory material. This attempt, via both argument and word choice, to situate the thesaurus as a means to correct past errors and not to overturn the essential basis on which the knowledge structures represented in the thesaurus rely, can be seen as an effort to increase ethos through the exhibition of goodwill toward the implied audience: the thesaurus will gently mend gaps in your worldview, not force an alternative worldview upon you.

These strategies continue in the thesaurus itself through both nomenclature and in selection of related terms, or those concepts linked via an unspecified associative relationship across hierarchical branches. The Women's Thesaurus structure is unusual for a thesaurus in that it is relatively flat hierarchically, and instead relies on a web structure created through many associative relationships. These related terms are described as being chosen to be illustrative, not exhaustive; that is, they were selected to provide a sense of the variety of possible relationships that a concept might have and not to enumerate all relationships of a particular type. Given the emphasis placed on the purposeful selection of these related terms, analysis of term choices provides a key window into the persuasive strategies exhibited by the thesaurus. For generation of ethos, the related terms for abortion, reproduced below, are an indicative example:

Abortion

> *Related terms:* abortifacient agents, abortion movement, antiabortion movement, attitudes, contraception, dilatation and curettage, fetuses, hospitals, laws, medical ethics, miscarriage, population control, pregnancy prevention, religious law, reproductive freedom, unwanted pregnancy, viability

It is striking that the commonly used terms *pro-choice* and *pro-life* are not used, with *abortion movement* and *antiabortion movement* appearing instead. Focusing on the procedure itself as opposed to the broader goals of the movements associated with the procedure's legality (that is, choice and life), gives the thesaurus a sense of being rational, balanced, and clinical, as opposed to overtly political. Even the related terms most closely connected to the goals of pro-life and pro-choice movements, *viability* (the ability of a fetus to live outside the womb) and *reproductive freedom,* are at a fairly high level of abstraction, and neither of these encompasses the idea of rights, either of a fetus or of women who would control their reproductive capacities. While two related terms, *attitudes* and *medical ethics,* hint at associated political controversy, these terms are also extremely abstract, giving no sense of the specific attitudes, for example, that might be at play here. The restriction to *medical* ethics likewise defuses the potential for disagreement amongst readers of different political or religious stripes. So one can see in this entry the construction of an ethos that attempts to portray the thesaurus as focused on accuracy and completeness, without is own political agenda.

However, to complicate matters somewhat, it is also possible to glimpse an additional, alternate construction of ethos aimed not toward the mainstream audience, but toward a secondary audience of feminists or women's activists. Five of the related terms refer to concepts associated with contraception, an issue of importance to pro-choice activists *(contraception, population control, pregnancy prevention, reproductive freedom,* and *unwanted pregnancy),* while only two related concepts represent issues of special concern to pro-life activists *(religious law* and *viability).* In addition, while the term *pro-life* doesn't appear anywhere in the thesaurus, the term *prochoice* does exist, although it refers merely to the belief that a woman has a right to choose to have an abortion and not to the associated political and social movement. Such moves might be perceived as reassurances to a secondary audience of feminists and activists that although compromises have been made in order to render the project persuasive to a wider audience, the Women's Thesaurus remains sympathetic to feminist ideals.

This secondary appeal is limited in scope, however, by the primary focus on the larger audience. To frame the pro-choice position, in the context of the Abortion entry, as focused on issues related to contraception may avoid controversy by keeping the associated concepts at a clinical, instrumental level—avoiding a medical condition and its associated social consequences.

However, this means of delineating the Abortion concept's expanse is also to omit the notions of autonomy and personal control that form the deeper (and more radical) core of pro-choice politics. Indeed, while the Women's Thesaurus might have hoped to construct an ethos acceptable to all feminists or women's activists, the success of its appeal seems limited to those who might accept and agree with the Women's Thesaurus strategy of mending holes in current knowledge structures, as opposed to the creation of completely new structures. An adherent of feminist standpoint epistemology, for example, in which women's ways of knowing are privileged as unique and different, may not be easily persuaded by the Women's Thesaurus strategy here. This example shows the difficulties involved in attempting to generate ethos with different audiences; in achieving believability for one group, the Women's Thesaurus sacrifices ethos with another constituency.

The ethos-based strategies associated with the Abortion entry occur throughout the Women's Thesaurus. The Compulsory Heterosexuality entry forms another example of a concept with equally explosive potential that is similarly defused through nomenclature and related term selection. *Compulsory heterosexuality* (not explicitly defined in the thesaurus itself) is not merely the idea that heterosexual relationships are the social norm but, within radical feminism (as articulated by Adrienne Rich in [13]), the conviction that heterosexuality is an instrument of male political and social domination of women, as it compels women into a subservient position as wives. (Rich proceeds to advocate lesbianism as a political, not merely a sexual, choice.) The related terms for this entry appear as follows:

Compulsory heterosexuality

> *Related terms:* completion complex, female sexuality, gay/straight split, heterosexism, homophobia, homosexuality, lesbianism, majority culture, male bonding, male norms, sex stereotypes, straights

As with the Abortion entry, the most controversial aspects of compulsory heterosexuality, its political elements, are either not present or are referred to obliquely and abstractly (as in the use of *gay/straight split* and *majority culture).*

The Patriarchy entry is illustrative in a slightly different way. On first glance, the related terms for this entry appear much less restrained than the entries for abortion or compulsory heterosexuality, as its related terms provide an extensive list of patriarchy's evils:

Patriarchy

> *Related terms:* aggressive behavior, androcentrism, colonialism, culture, discrimination, exploitation, family structure, gods, male norms, matriarchy, patriarchal language, patriarchal religion, phallocentrism, power, religion, sexism, theology, violence

It may seem like this set of related terms is not quite as balanced and detached as the set chosen for the Abortion entry. The only indication of any positive aspect of patriarchy, for example, is the quite vague *culture.* However, while a majority of the listed terms seems to represent the negative effects of patriarchy, these are most often expressed in a gender-neutral way, as opposed to actions or beliefs that relate to women only *(aggressive behavior, colonialism, discrimination, exploitation,* and *violence* are not sex-specific, although many of these terms could be made so: violence against women, for example, which has a particular meaning and does exist as a term in the thesaurus). Additionally, only a single term is included, *matriarchy,* that represents an alternate political and social system, and again, this term is vague and abstract. There are no references to lesbian separatists, consensus (as an alternate power structure), and so on.

As a final example of ethos-based appeal for the Women's Thesaurus, the introductory material emphasizes the detailed, careful process by which the thesaurus was developed, explicitly enumerating the large number of organizations involved in the project, the extensive lists of source material, and the involvement of a variety of experts in each thesaurus category, making direct reference to the standards and guidelines consulted in the system's development. The extensive delineation of authorities involved (organizations, people, processes, standards) reiterates the ethos-based appeal to reassure a mainstream audience that this thesaurus aims merely to repair errors in past thinking, not to install a completely new epistemological regime.

4. ETHOS IN THE DRUGSENSE NEWSBOT CONCEPT DICTIONARY: WE FEW AGAINST THE WORLD

The DrugSense newsbot concept dictionary is a thesaurus-like structure, implemented in XML, to automatically gather and classify news articles related to drug use and policy ([8]). DrugSense operates under a drug reform agenda that is critical of excessive regulations regarding currently illegal drugs.

While the Women's Thesaurus attempts to render a potentially controversial perspective for a wide audience, the DrugSense newsbot concept dictionary, while also expressing a point of view that deviates from mainstream opinion, concentrates on a more specific audience, one already in agreement with the position that DrugSense presents. Through the content, design, and structure of its Web site, the DrugSense concept dictionary conveys a sense of its creators as being an enthusiastic but perhaps undisciplined group. The site's design, for example, as displayed in the following figure, seems consciously primitive, with clashing colors and crude emoticons as graphic elements, as if DrugSense were proclaiming to the world that it is uninterested in such conventional displays of professionalism.

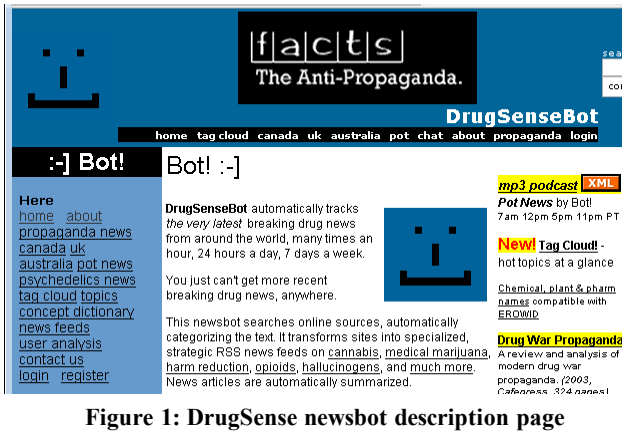

Figure 1: DrugSense newsbot description page

While these qualities of ragtag cheekiness may be intriguing to the world at large, and while the obvious intensity of the DrugSense group's commitment may inspire a certain respect, such qualities displayed to excess, as subsequent analysis will show, seem to decrease believability with a mainstream audience.

However, this strategy does seem persuasive for like-minded activists, increasing their commitment to the cause.

DrugSense defines its own sense of character primarily in opposition to the group in power, which it describes as "prohibitionist drugwar propagandists." DrugSense characterizes these opponents through a series of concepts in the dictionary called "drugwar_propaganda themes" and the terms associated with each theme. For example, the following bulleted list shows some of the terms associated with the concept "propaganda_theme1." The propaganda_theme1 concept encapsulates, through its list of included terms, how, according to DrugSense, the prohibitionist drugwar propagandists vilify certain groups of people because of a perceived association with currently illegal drugs.

Examples from propaganda_theme1 term list:

- minority, minorities, racial
- Black, African-American, black people, black community, rappers, rap music, pimp
- Hispanic
- immigrant, foreigner
- terror, links to terror, drugs and terrorism
- non-conformist, counterculture, draft dodger

Through this characterization, DrugSense implies that their opponents are racist, xenophobic, and fear-mongering. By including large numbers of such terms in this concept area, and many fewer terms that might indicate more legitimate groups of concern, such as terms that represent actual drug dealers, DrugSense portrays the "drug warriors" in the worst possible light and legitimizes its own opposition to them, promoting a sense of goodwill between DrugSense and the audience. Such an inflammatory strategy might be off-putting to those not already convinced that drug policy is completely wrong-headed. However, for an audience already critical of current drug policy, this strategy potentially deepens their adherence to the cause and persuades the audience that the "drug warriors" are themselves actually villainous. The emotional outrage evoked here may provide, as Smith and Hyde ([14]) suggest, a sense of unity among those who feel the emotion, here both the target audience of fellow drug reformers and DrugSense.

Similarly, propaganda_theme6 is intended to group documents in which DrugSense opponents demonize drug reformers. Terms associated with this concept area include:

- epidemic, scourge, plague, blight
- evil, devils, demons, diabolic, soul-snatch, soul-destroy, fiend, enslave

In other words, the "drug warriors" (them) are describing "drug reformers" (us) as evil fiends who are responsible for perpetuating a foul disease.

This ethos cultivated by DrugSense, based in mutual resistance to an overwhelming power, is conveyed most forcefully in appropriation of a Hitler image to illustrate the concept drugwar_propaganda.

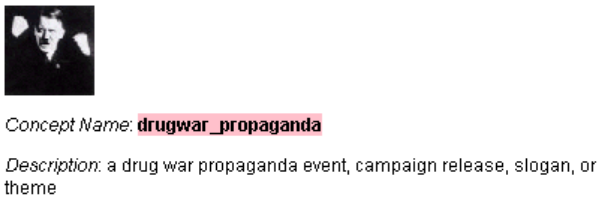

Figure 2: Drugwar_propaganda concept and Hitler illustration from DrugSense newsbot concept dictionary

Comparing their opponents to Nazis is quite extreme and is likely to alienate even a sympathetic mainstream audience, for example those who agree that drug-sentencing guidelines seem harsh but who nonetheless have concerns about addiction, crime, and so forth. However, using this controversial image may strengthen the ethos of DrugSense with committed drug reformers. By taking a risk with the Hitler reference, DrugSense reassures fellow sympathizers that DrugSense understands and participates in their passion for the cause. This enhances the moral character of DrugSense: use of the Nazi image shows that DrugSense is willing to stand against what they perceive as oppression, even when it's an unpopular stance, and it would be much easier in the short term for DrugSense to follow a strategy more similar to that of the Women's Thesaurus, downplaying the radical nature of their views in order to make their perspective more acceptable to a larger group.

5. DISCUSSION

Performing this type of analysis on schemes for organizing information foregrounds the potential for information systems as communicative devices, or forms of expression in their own right, as opposed to mere warehouses of data and associated tools for extracting information bits that conform to user requests. Indeed, many researchers, such as Hope Olson, Geoff Bowker and Susan Leigh Star, and Sanford Berman, amongst others, agree that classifications and other means of organizing information may communicate messages based on the interpretation of the subject matter that they organize ([15], [16], [17]). However, for most scholars, such "bias," while perhaps an inevitable byproduct of the inexact nature of language and resulting shifts in concept semantics across groups and over time, should be identified and, to the extent possible, "fixed," with the idea that representations most closely matching current thought patterns should best facilitate accurate retrieval.

I contend, however, that the assertion of a particular point of view towards a subject may actually form the core of an information system's usefulness and interest, especially if the system's interpretation of the domain it represents differs from the currently dominant perspective. While I might not agree with the drug-reform position advocated through the DrugSense newsbot concept dictionary, I might nonetheless find it intriguing and perhaps productive of my own thinking. (I might, for example, agree that people of color are disproportionately depicted as nefarious or degenerate for their perceived involvement in drug culture or the drug economy, and I might wonder what other aspects of drug policy might be overstated.) As social software systems in which users assemble, organize, and publish collections, such as Flickr, LibraryThing, and CiteULike, become more widespread, the citation of resources seems poised to become an even more significant form of expression. Instead of minimizing the potential of information systems to embody creative, original interpretations of their contents, then, we might seek to better comprehend how such functions operate, in order to

design them purposefully (and thus, one hopes, more honestly and responsibly). If information systems are also forms of documents, as Buckland's work suggests, then perhaps we need a more detailed understanding of how they work as documents, so that we can both understand what existing information systems do and create new designs that expand the potential of the form ([18]).

Research currently tends to focus more on *what* information systems communicate, rather than *how* they communicate with greater or lesser effectiveness. Many analyses of existing classification schemes concentrate primarily on identifying a lack of representational accuracy or complexity. For example, Hjorland, Orom, and Abrahamsen describe how, for the domains of psychology, art, and music, existing classification schemes fail to show the full extent and diversity in which different discourse communities might characterize the subject's knowledge base ([19], [20], [21]). While such studies pinpoint the areas that existing classification schemes omit, they are less interested in describing how the textual elements of a classification combine to create effective subject interpretations or in how one might focus design processes in order to emphasize particular rhetorical effects. Other work, such as that of Bowker and Star and Schmidt and Wagner, shows how classifications function as infrastructure to coordinate social action, constraining some activities while enabling others ([16], [22]). These studies also tend to concentrate on matters of concept inclusion and exclusion, such as, in Bowker and Star's discussion of the International Classification of Diseases, how the geographical context of leishmaniasis disappears from later editions when the synonyms Baghdad boil and Delhi boil are removed from the structure. Bowker and Star's examination of the ICD is more interested in individual decisions and their ramifications for social practice and less on how such choices might cohere, in a particular implementation through specific classificatory elements, into a more or less persuasive theory of disease.

The current study illustrates one mechanism through which a deeper, more comprehensive understanding of information systems' expressive properties might be achieved: using a conceptual framework synthesized from existing scholarly domains of critical inquiry (here, the notion of ethos as used in rhetoric), to focus textual analysis techniques of close reading, as used throughout the humanities disciplines, to both characterize a range of document properties (as in the examples of nomenclature, related concept selection, and presentation elements, such as images and layout, referred to in the analyses of the Women's Thesaurus and DrugSense newsbot concept dictionary) and to show the effects that such properties can be made to produce (in this case, in the generation of ethos and thus increased believability and persuasiveness).

In subjecting information systems to this type of critical inquiry, we can not only learn more about how existing systems function, we can use our enhanced conceptual understanding to more effectively design information systems for communicative purposes. Say, for example, that I am designing an online resource library on the subject of vegetarianism, and I want to express to others the idea that vegetarianism is morally obligatory. By understanding the concept of ethos, and how it relates to believability and persuasiveness, I know that I need to develop a rhetorical strategy that targets a particular audience, such as people who aren't currently vegetarian but who have some interest in reducing meat consumption, and I know that I must determine how to create a sense of practical wisdom, moral character, and goodwill with this audience. By understanding how ethos manifests in classifications and other forms of organizational schemes, as through the analyses described in this study, I can begin to explore how I might employ similar types of textual effects in my own collection of materials. I might decide, for example, that to build goodwill with my selected audience, I don't want to focus on how meat eating is bad, perhaps making my audience feel guilty about a fondness for bacon; this could cause the audience to suspect that I don't share their basic values. Instead, I want to emphasize how vegetarianism is good, and how the audience might further goals they already hold in adopting vegetarianism. I might, for example, include in my collection documents relating to sustainability initiatives of many sorts, and underline, through my scheme for organizing the documents, the ways in which vegetarianism in particular and sustainability in general share a commitment to certain moral values. I might include in my organizational scheme a set of concepts for "vegetarian values," such as unity of beings, compassion, and moral accountability, and place resources both strictly about vegetarianism and about other forms of sustainability initiatives, such as reuse and recycling, together in those categories. In other words, I would use the selection of resources, their organization, and a means of providing access to them, as a vehicle to implement a persuasive strategy for communicating my interpretation of a subject area, in this case vegetarianism. In essence, I would hope that, through their interactions with my digital library, users would experience a way of thinking that they might find intriguing and instructive.

6. CONCLUSION

While the generalized behavior models and factor sets that constitute information credibility standards provide a reasonable foundation from which to understand common, typical perceptions that influence basic-level assessments of document believability, credibility research as conducted within information science is less useful in understanding the potentially complex, nuanced, and situational elements that may interactively combine to produce a document's sense of persuasiveness. This paper proposes that the rhetorical notion of ethos can provide one way to examine those aspects of persuasiveness that emanate from a specific audience's perception of a document author's believability. As illustrated through readings of two systems for organizing information, the Women's Thesaurus and the DrugSense newsbot concept dictionary, ethos can be used as a conceptual foundation to anchor textual analysis and focus critical inquiry of existing information systems, enabling systematic examination of the ways in which particular textual elements lead to certain rhetorical effects. Moreover, the understanding gleaned from both theoretical exposition and the concrete determination of potential options through interrogation of existing examples can facilitate the purposeful, potentially innovative design of new systems. In foregrounding the document nature of information systems and their associated expressive potential as embodiments of unique perspectives, this study emphasizes how the selection, organization, description, and provision of access to collected information resources can be viewed on one level as a form of communication, of writing. Under this lens, social classification and other forms of social software may be notable not merely for the aggregation of massive data sets but also as a potential network of individual communicative connections, as linked sets of resource collections become, perhaps, extended dialogues. By understanding how such resource collections work to communicate more and less effectively for particular situations, we can both enhance our

basic knowledge regarding the functions that information systems may perform and spur potentially innovative, creative design possibilities.

7. REFERENCES

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